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### Summary

An ad hoc coalition of natural gas distribution utilities ("Gas Utilities") petition for limited reconsideration of the Commission's February 6, 1995 Report and Order ("Decision") establishing rules for automatic vehicle monitoring systems ("AVM") operating in the newly established Location and Monitoring Service ("LMS").

The Gas Utilities have participated in this proceeding to protect their ratepayers' substantial investment and the public interest in the continued use for automatic meter reading ("AMR") of Part 15 devices operating in the 902-928 MHz band. The Gas Utilities have carefully reviewed the Commission's Decision and applaud it as a generally well-reasoned accommodation to most parties to this proceeding. The Gas Utilities further commend the Commission for its recognition of the public interest benefits of Part 15 devices, and its efforts to protect their continued use of the 902-928 MHz band.

Without minimizing the degree to which the Commission has sought to protect Part 15 operations in this band, however, the Gas Utilities remain concerned that in certain respects the Decision does not adequately protect the legitimate interests of Part 15 users in general and of AMR users in particular. Accordingly, the Gas Utilities believe certain additional accommodations are needed to protect current and future Part 15 use of the 902-928 MHz band, and which will not appreciably harm the legitimate interest of LMS

providers. The modifications the Commission needs to make to the Decision to protect Part 15 devices, include the following:

- a. Limit emissions from LMS base and mobile transmitters operating from 902-927.25 MHz to 10 watts effective radiated power ("ERP"), except where highly directional antennae are employed, and impose reasonable height restrictions on multilateration systems transmitting antennae;
- b. Provide protection for Part 15 devices from interference from grandfathered multilateration stations; and
- c. Prohibit wide-band forward links and provide stricter limits on interconnection and operations with the public switched telephone network ("PSTN").

With the above described modifications, Part 15 devices would be better able to co-exist for the foreseeable future in this band with LMS providers. In the absence of such protections, Part 15 devices may, despite the Commission's serious efforts to protect them, be forced out of the band with considerable economic loss needlessly suffered by their consumers and manufacturers.

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Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, DC 20554

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FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

In re )  
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Amendment of Part 90 of the ) PR Docket No. 93-61  
Commission's Rules to Adopt )  
Regulations for Automatic )  
Vehicle Monitoring Systems )

To: The Commission

**PETITION FOR LIMITED RECONSIDERATION**

An ad hoc coalition of natural gas distribution utilities ("Gas Utilities") by counsel, petition for limited reconsideration of the Commission's February 6, 1995 Report and Order, establishing rules for automatic vehicle monitoring systems ("AVM") operating in the newly established Location and Monitoring Service ("LMS").<sup>1/</sup> In support, the following is shown:

**I. Introduction.**

1. The Gas Utilities have participated in this proceeding to protect their ratepayers' substantial investment and the public interest in the continued use for automatic meter reading ("AMR") of Part 15 devices operating in the 902-928 MHz band.<sup>2/</sup> In this

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<sup>1/</sup> Automatic Vehicle Monitoring Systems, 10 FCC Rcd \_\_\_, FCC 95-41, 60 FR 15248 (March 23, 1995) ("Decision"). Pursuant to Section 405 of the Communications Act of 1934, as amended, and Commission Rule Section 1.4, this Petition for Limited Reconsideration is timely filed within 30 days (and applicable holiday periods) following publication of a summary of the Decision in the Federal Register.

<sup>2/</sup> The number of Part 15 devices and the investment of consumers and businesses in those devices, have been consistently understated in this proceeding. For example, the Decision at para. 30, acknowledges the existence of more than 4,000,000 Part 15 devices in operation in this band. This is a considerable understatement of existing and planned Part 15 use.

(continued...)

connection, the Gas Utilities have articulated three concerns with respect to this proceeding. First, the Gas Utilities' desire to avoid interference complaints from licensed users of the band which may force them to cease or substantially limit their operations because of alleged interference. Second, the Gas Utilities wish to avoid loss of service as a result of interference from licensed users. Third, the Gas Utilities wish to preserve the environment

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<sup>2/</sup>(...continued)

Indeed, the record shows that as of July, 1994, the domestic manufacturer of the device used by the Gas Utilities, Itron, had sold more than 3,000,000 units, and that more than two million additional units were on order. Itron advises the Gas Utilities that it has now sold more than 4,000,000 devices. Other makers of AMR devices, e.g., Metricom and Cellnet, have also reported substantial sales. Thus, there are considerably more than 4,000,000 AMR Part 15 devices alone operating in the 902-928 MHz band. Substantial additional investment is planned. As the Utilities Telecommunications Council reported in mid-1994, the results of a survey of its members indicated that of just 36 utilities responding to the survey, 2,144,853 AMR units were then in service, representing an estimated investment of 179 million dollars. These same 36 utilities have plans to install an additional 13,066,300 units, at an additional 773 million dollar investment. Thus, this one class of Part 15 device alone is expected shortly to have more than 15,000,000 units in service among just a fraction of the nation's utilities, with a total investment approaching a billion dollars. See Comments of Ad Hoc Gas Distribution Utilities Coalition on Informal Staff Band Segmentation Proposal, n.14 (July 18, 1994).

Finally, the recent study Metricom submitted in this proceeding indicated that more than 2,000,000 consumer devices -- such as cordless phones, wireless speakers, and wireless alarm systems -- currently operate in the 902-928 MHz band. See January 20, 1995 Letter of Henry M. Rivera, Esquire, Attachment at 12. It is thus clear that the actual number of Part 15 devices operating in the band is substantially higher than the Decision recognizes and that the public interest considerations of protecting the ability of these Part 15 devices to operate are also substantially more important.

in the 902-928 MHz band for future Part 15 use and expansion by limiting ambient noise in the band. See Decision, at para. 32.

2. The Gas Utilities have carefully reviewed the Commission's Decision. That review discloses that the Decision is generally a well-reasoned accommodation to most parties to this proceeding. The Gas Utilities commend the Commission for its recognition of the public interest benefits of Part 15 devices, and its efforts to protect their continued use of the 902-928 MHz band.<sup>3/</sup> In particular, the Gas Utilities applaud the Commission's determination to protect the bulk of the 910-920 MHz sub-band from multilateration systems, and its definition of harmful interference so as to exclude Part 15 devices operating indoor, or if outdoor, operating below one watt (with up to 6 dBi of directional gain) and lower than five meters above ground.<sup>4/</sup> The Gas Utilities also commend the Commission for adopting certain other rules designed to limit the likelihood that multilateration systems will eventually crowd out Part 15 devices from the band, including height-power and interconnection restrictions.<sup>5/</sup>

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<sup>3/</sup> See Decision at para. 34. As the record in this proceeding shows, AMR devices promote business efficiency, energy conservation, and ratepayer savings. Moreover, many utilities have targeted initial installation of AMR devices in high crime areas to protect the safety of utility personnel and property. In addition, it is increasingly difficult to do on-site reading because of access problems. AMR thus facilitates the security and convenience of utility employees and customers, lowers energy costs and promotes conservation.

<sup>4/</sup> See Rule Section 90.361.

<sup>5/</sup> See Rule Sections 90.205(b) and 90.353(a)(3).

3. Without minimizing the degree to which the Commission has sought to protect Part 15 operations in this band, however, the Gas Utilities remain concerned that in certain respects the Decision does not adequately protect the legitimate interests of Part 15 users in general and of AMR users in particular. Accordingly, this Petition for Limited Reconsideration will address those limited areas where the Gas Utilities believe certain additional accommodations are needed to protect current and future Part 15 use of the 902-928 MHz band, and which will not appreciably harm the legitimate interest of LMS providers. The modifications the Commission needs to make to the Decision to protect Part 15 devices, include the following:

- a. Limit emissions from LMS base and mobile transmitters operating from 902-927.25 MHz to 10 watts effective radiated power ("ERP"), except where highly directional antennae are employed, and impose reasonable height restrictions on multilateration systems transmitting antennae;
- b. Provide protection for Part 15 devices from interference from grandfathered multilateration stations; and
- c. Prohibit wide-band forward links and provide stricter limits on interconnection and operations with the public switched telephone network ("PSTN").

4. With the above described modifications, Part 15 devices would be better able to co-exist for the foreseeable future in this band with LMS providers. In the absence of such protections, Part 15 devices may, despite the Commission's serious efforts to protect them, be forced out of the band with considerable economic loss needlessly suffered by their consumers and manufacturers.



**II. The Commission should modify its height/power limitations to provide further protection for Part 15 operations.**

5. The Decision adopted height/power limitations of 300 watts ERP for narrowband forward links and 30 watts ERP for all other transmissions within the 902-928 MHz band. See Rule Section 90.205(b). In addition, the Decision limited non-multilateration systems to antenna heights of 15 meters above ground level ("AGL"). Decision at para. 93.<sup>6/</sup> The Gas Utilities agree that height/power limitations on LMS operations are essential given the shared nature of the band. However, certain additions to and modifications of the height/power limits adopted in the Decision are necessary to ensure that all users may mutually coexist in the band.

6. First, the limit of 300 watts ERP for narrowband forward links is itself reasonable, given their isolation at the upper portion of the 902-928 MHz band. However, a height above average terrain ("HAAT") limitation needs to be placed on such links to minimize the possibility of interference with other users, both within and without the band. Because propagation of a radio signal increases as a factor of height, a 300 watt forward link transmitter operating at several hundred meters HAAT -- such as from a mountaintop -- would be in a position to saturate receivers of Part 15 devices operating nearby in the upper region of the 902-

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<sup>6/</sup> The Decision at para. 93 stated an antenna height restriction of 10 meters AGL. However, Section 90.353(a)(8) established a 15 meter AGL height unit. This was confirmed in the February 17, 1995 Erratum to the Decision, DA 95-265.

928 MHz band, as well as to interfere with other licensed stations.<sup>7/</sup> In other parts of the rules, height/power limitations are the norm.<sup>8/</sup> To conform the rules for the LMS to other parts of the Commission's Rules, the Gas Utilities request the Commission to reconsider this portion of the Decision and impose a reasonable height limitation of 100 meters HAAT for high powered forward links, with equivalent power reductions for higher heights.

7. Second, modification of the maximum height/power limit is also necessary for LMS transmissions in the remaining portions of the band. Outside the high-powered forward link allocations, the Decision places a limit of 30 watts ERP for multilateration and non-multilateration systems, and a 15 meters AGL limit for non-multilateration systems. Certain modifications of these limits, detailed below, are necessary. See Decision at para. 93.

8. Thirty watts ERP for mobile and base stations operating in the heart of the 902-928 MHz band is too much power for a band

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<sup>7/</sup> For example, a 300 watt ERP transmitters operating at 1000 meters HAAT radiates a signal equal to 30,000 watts at 100 meters. See Affidavit of Thomas G. Adcock, Exhibit I, hereto. Because high powered forward links are at the top of the band, a substantial likelihood exists of interference to neighboring Multiple Address Systems located at 928-929 MHz where such links operate at very high HAATs. Moreover, neighboring multilateration systems might also be adversely affected by such high powered forward links located at very high HAATs. But see Rule Section 90.359, requiring Major Trading Area ("MTA") licensed multilateration systems to limit the field strength of signals transmitted from their base stations to 47 dBuV/m at their MTA boundaries.

<sup>8/</sup> See, e.g., Rule Sections 22.565(c), 22.913(b), 73.333, and 90.494(f). Cf. Section 90.361 (setting a six dBi five meter threshold for outside Part 15 devices, below which they will be presumed not to interfere with multilateration systems).

designed to be shared by several classes of users. Were this not a shared band, a 30 watt limitation might be reasonable. Given the shared nature of the band, however, it is appropriate to minimize the transmit power of LMS systems to prevent interference to other users. The Decision unfortunately does not address this issue, nor justify a 30 watt power limit. With respect to mobile transmitters, the Gas Utilities suggest that 10 watts ERP should be sufficient for such transmitters to be received by the several LMS system receive sites needed to perform a location fix.<sup>9/</sup>

9. Although the effects of interference may be minimized in the case of mobile transmitters because of their transient nature, low duty cycle and low transmitter heights,<sup>10/</sup> none of these

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<sup>9/</sup> See Exhibit I. As certain of the multilateration system proponents have shown in this proceeding, the wide-band direct sequence signal of a multilateration system mobile substantially increases its range over the use of a narrowband signal. In the analogous cellular service, which uses narrowband transmitters, systems are designed so that mobiles are received at several sites so that the system may compare transmit power and assign the mobile to the optimum available cell. Multilateration systems perform a similar task of comparing time of arrival at various receive sites of a mobile response to an interrogation signal. If cellular systems can function adequately with a seven watt mobile power limit using narrowband transmissions, multilateration systems should be able to perform adequately using a 10 watt wide-band transmission. Moreover, to the extent there should ever be a problem in receiving reverse link signals, multilateration systems have the unique ability to solve that problem by simply raising the heights of their receiving antennae, or adding additional receive sites. Neither of these two fixes would ever have the effect of increasing interference to Part 15 devices.

<sup>10/</sup> The transitory nature of mobile transmissions would likely make interference from such transmission's itself sporadic as to any one Part 15 device. The cumulative effect of a fully loaded multilateration system on the universe of Part 15  
(continued...)

limiting factors would be present with respect to base station transmissions, which operate from fixed locations, nearly continuously, and with as high an elevation as the rules and vagaries of site acquisition will allow. Accordingly, limiting the power of fixed base station transmissions in the main segment of the 902-928 MHz band is even more important than limiting mobile transmit powers. For this reason, the Gas Utilities also support a limit of 10 watts ERP for base station transmitters, with an exception allowing 30 watts ERP for narrow beam-width, directional, non-multilateration transmitter sites.<sup>11/</sup>

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<sup>10/</sup>(...continued)

devices, however, could be substantial. Given the Commission's decision to put multilateration systems in this band, the Gas Utilities do not have a solution which would completely remedy interference from mobiles. Limiting their power to 10 watts ERP would nonetheless minimize interference while allowing multilateration systems to operate as intended.

<sup>11/</sup> See Exhibit I. The Gas Utilities understand the bulk of non-multilateration systems are tag readers, using transmitters operating at approximately two watts ERP. These systems are not likely, therefore, to be adversely affected by a power limit of 10 watts ERP. To the extent a particular non-multilateration system may need to operate with a higher power, it should be able to operate with a narrow beam-width antenna to avoid transmitting radio frequency energy beyond where it actually needs to go.

In this connection, the Gas Utilities urge the Commission to revise the LMS rules to make it clear that non-multilateration systems are to limit their transmissions to a confined area, and will not be licensed to provide communications over an extended area. Although it was clearly the Commission's intention that non-multilateration systems operate in a local defined area, the rules, as adopted, merely define a non-multilateration LMS system as "a system that employs any of a number of non-multilateration technologies to transmit information to and/or from vehicular units." The Commission should clarify this definition to provide that non-multilateration systems are to operate over a limited, contiguous area.

10. With respect to the height limitation for base station transmitters, the 15 meter limitation for non-multilateration systems is acceptable;<sup>12/</sup> however, that limitation should also be applied to multilateration base station transmissions operating at frequencies below the high-powered forward links to limit potential adverse effects to Part 15 device operation within the multilateration sub-bands. If height limitations are helpful for preventing interference from non-multilateration systems, and the Gas Utilities believe they are, then they are equally useful to prevent interference to Part 15 devices operating in the multilateration bands. Accordingly, the 15 meter AGL height limitation should apply equally to multilateration base stations operating in all band segments below the high powered narrowband forward links.

**III. The Commission should protect Part 15 operations from interference from grandfathered multilateration systems.**

11. The Decision provides that multilateration systems constructed by February 3, 1995 are grandfathered under the interim rules until April 1, 1998.<sup>13/</sup> Authorized multilateration stations which were not constructed by February 3, 1995, will be allowed until April 1, 1996 to construct pursuant to the revised band plan

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<sup>12/</sup> Candidly, the Gas Utilities would have preferred the 10 meter AGL height limit as provided for originally in paragraph 93 of the Decision. However, if ERP is reduced to 10 watts for all but narrow beam-width signals, the Gas Utilities believe any substantial interference to Part 15 devices would likely be minimal. See Exhibit I.

<sup>13/</sup> Such stations must file within 30 days of the effective date of the Decision, an application for modification of license to comply with the revised band plan, or their licenses will be terminated without renewal at the earlier of their expiration date or April 1, 1998. Decision at para. 62.

set forth in the Decision. The Gas Utilities support the requirement that grandfathered licensees construct their unconstructed facilities on or before April 1, 1996. However, the Gas Utilities oppose affording constructed grandfathered stations until April 1, 1998 to modify their facilities to comply with the amended rules. The concern the Gas Utilities have is that the amended rules represent the Commission's attempt to balance the legitimate needs of the Part 15 community against the expressed needs of the multilateration proponents. Grandfathered operation under the interim rules, however, obviously does not account for the Commission's delicate balancing of interests in the Decision and thus does not provide the necessary degree of protection to Part 15 interests.

12. Thus, grandfathered licensees would not have to comply with the height/power limits of the amended rules, nor the carefully considered band plan the Commission has adopted to protect the interests of Part 15 users. The Gas Utilities therefore request the Commission to reconsider this aspect of its Decision, and to enact the following additional safeguards for grandfathered multilateration operations:

- a. Grandfathered multilateration systems would be required to comply with the Decision's height/power limitations by April 1, 1996;
- b. Such systems would be required to comply with all other aspects of the amended rules by April 1, 1997; and
- c. Such systems would not receive interference protection from Part 15 devices operating otherwise in compliance with the rules, and would be placed under an obligation to minimize interference to such Part 15 devices until they are in full compliance with the amended rules.

13. The Gas Utilities' concerns are particularly important because although the LMS multilateration licensees have not constructed or operated many facilities to date, under the grandfathering rule provisions, there could be a substantial number of multilateration facilities placed in service without the protective restrictions the Commission has adopted to ensure a workable system of spectrum sharing. The Gas Utilities understand the Commission's desire to provide a reasonable transition period for grandfathered multilateration systems. Even though such licensees have only been operating under interim rules, it is nevertheless fair to avoid placing these systems under the stress of immediately rebuilding their facilities to comply with the amended rules. However, a requirement to fully comply with the amended rules within two years is not a substantial burden on such licensees, nor is the requirement to comply within a year with the amended height/power limitations.<sup>14/</sup> As to their relation with Part 15 devices, the multilateration licensees have stressed repeatedly that their existing operations have suffered only minor interference problems from Part 15 devices. Thus, a presumption that all properly operating Part 15 devices will not interfere with

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<sup>14/</sup> Compliance immediately with the revised power limits should be no burden at all, given the ease of turning a transmitter down. Modifying transmitting antenna heights does require some effort, although relatively minor. Having a year to accomplish both tasks is a very liberal accommodation to multilateration licensees.

their operations, and a requirement to minimize interference to Part 15 devices, is a minimal trade-off for grandfathering.<sup>15/</sup>

**IV. The Commission should prohibit wide-band forward links and non-emergency interconnected communications.**

14. The compromise nature of the Decision is illustrated by its treatment of wide-band forward links and public switch telephone network ("PSTN") interconnection. Both these concessions to the multilateration proponents threaten in the short and long terms to raise the noise level throughout the 902-928 MHz band and to create an inhospitable environment for continued Part 15 use of the band.

**A. Wide-band forward links.**

15. The Decision authorizes both wide-band forward and reverse links, subject to the condition imposed on all MTA licenses to "demonstrate through actual field tests that their systems do not cause unacceptable levels of interference to Part 15 devices." Rule Section 90.35(a)(4). Assuming, the transmit power of such links is reduced to 10 watts ERP, as discussed above, the Gas Utilities are not concerned with wide-band reverse link transmissions. These transmissions should be sufficiently

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<sup>15/</sup> The Gas Utilities would prefer a requirement that grandfathered stations must resolve interference to properly functioning Part 15 devices. A requirement that such systems minimize interference to these devices, therefore, is substantially less of a burden to these licensees than the Gas Utilities' ideal solution.



intermittent, transitory and localized as to not individually cause a substantial interference threat.<sup>16/</sup>

16. Wide-band forward links are a different matter altogether. Wide-band forward links are particularly pernicious because they will have the tendency to clog up the particular multilateration bands in which they operate for the full period of the forward link's duty cycle. During that time, spread spectrum direct sequence transmissions of Part 15 devices within range of the wide-band forward link -- which will most likely be the entire MTA multilateration system -- will be overpowered over the bulk of their transmission band.

17. Likewise, frequency hopping devices operating within that band that are sufficiently sophisticated to search for and avoid occupied frequencies will be crowded out of these portions of the band, and will migrate to and be concentrated in other portions of the 902-928 MHz band, most likely within the 910-920 MHz portion of the band where the meter reading devices used by the Gas Utilities operate.<sup>17/</sup> This will tend to cause the noise floor within this portion of the band to rise, causing degraded operation of the meter reading devices as well as of the migrating devices. Were sufficient congestion to occur, the Gas Utilities would be unable to obtain readings in the normal course on a substantial number of

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<sup>16/</sup> As stated in note 10, supra, the Gas Utilities remain concerned regarding the cumulative effect on Part 15 operations once multilateration systems approach fully loaded status.

<sup>17/</sup> Frequency hoppers that are not so sophisticated, would be rendered effectively inoperable as they hop across the spectrum on which the wide-band forward link operates.

affected meters.<sup>18/</sup> Moreover, from a longer term perspective, faced with a widespread difficulty to use Part 15 devices over the entirety of the 902-928 MHz band, manufacturers and consumers will gravitate to devices operating within the 909.75-919.75 MHz sub-band, risking the same type of crowding of this sub-band.<sup>19/</sup> Given that the record nowhere justifies the efficacy of wide-band forward links, the Commission should reconsider the Decision and prohibit them.<sup>20/</sup>

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<sup>18/</sup> The Itron device used by the Gas Utilities is well designed to operate in a noisy radio environment. That device, however, operates at a very low power and may be overwhelmed if the radio environment should become too noisy.

<sup>19/</sup> Indeed, the Decision specifically notes that manufacturers of Part 15 devices may choose to restrict their operating frequencies to the 902-904 and 909.75-919.75 MHz sub-bands to avoid interference from multilateration systems. See Decision at para. 39. Of course, some manufacturers may decide to migrate to other bands where the environment for Part 15 devices is less hostile. That can offer only limited relief, however. First, propagation characteristics in other bands may not be as good as in the 902-928 MHz band, especially in the higher frequency bands. Second, in the case of the Gas Utilities, the industry and its ratepayers cannot sustain the obsolescence of hundreds of millions of dollars of investment. The useful life of AMR devices ranges up to 20 years. Many utilities have relied on this useful life figure in convincing state commissions to approve their investment in AMR, and could be faced with hostile state commissions were they to attempt to write-off prematurely an investment originally made to save themselves and ratepayers over the long term.

<sup>20/</sup> Pinpoint has argued that wide-band forward links promote positional accuracy because they are less susceptible to multi-path interference. See Letter of David E. Hilliard, Esquire (December 7, 1994). However, it is the reverse link, from the mobile to various receivers, which is analyzed to determine location. Therefore, contrary to Pinpoint's arguments, positional accuracy is not a factor with respect to wide-band forward links.

**B. PSTN interconnection.**

18. The Decision recognizes that unlimited interconnection and messaging service is inappropriate in a shared, highly congested band.<sup>21/</sup> However, in addition to permitting status and instructional messages between the system and monitored vehicles, the Decision allows store and forward communications from the PSTN to monitored vehicles and from the vehicles for later transmission over the PSTN. Decision at para. 27. Real time interconnection for emergency communications is also allowed. Id. The Gas Utilities do not object to either emergency communications traffic or brief message traffic between the system and monitored vehicles.<sup>22/</sup> However, the Gas Utilities request reconsideration of the Commission's decision to allow interconnected store and forward communications.

19. Although the Gas Utilities acknowledge the prohibition in the revised rules on messages unrelated to the location or monitoring of vehicles, the plain fact is that a content-based restriction presents substantial enforcement problems. Multilateration systems will have neither the personnel nor the inclination to monitor the thousands of store and forward messages which may be transmitted by

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<sup>21/</sup> Decision at paras. 25-26. This is because such transmissions entail continuous spectrum occupancy in the forward and reverse links, rather than the short bursts of data needed to obtain a location fix.

<sup>22/</sup> The Gas Utilities prefer the use of a panic button mechanism, rather than a real-time voice link as such a procedure allows for immediate mobility of vehicular passengers who may need to flee a vehicle which has crashed, is on fire, or which is being stolen or vandalized.

their subscribers; nor is it fair to force them to do so. Moreover, having the means to send store and forward messages, and having purchased the service, multilateration subscribers are unlikely to limit messages voluntarily to matters concerning the location and monitoring of their vehicles.<sup>23/</sup> Furthermore, it is unrealistic to expect the Commission to dedicate substantial resources to policing this restriction. With all their other activities, the Commission's field offices are neither likely to spend significant time monitoring multilateration message traffic, nor investigating complaints of violation of this restriction. The simple fact is that no matter what the rules say, store and forward communications will not in reality be limited to those related to the location and monitoring of the relevant vehicles.

20. Finally, the Gas Utilities believe significant First Amendment issues are raised by a government restriction based on message content. A content-based speech restriction -- as opposed to a time, place and manner restriction -- is upheld by the courts only upon an exacting showing that the restriction is necessary to achieve a compelling governmental interest, and is narrowly

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<sup>23/</sup> Without regard to whatever the rules provide, multilateration customers are apt to consider their message traffic private and resent any interference from the service provider or the Commission with respect to the content of such messages. In addition, persons who would send store and forward messages to vehicles will have no contractual obligation to limit their messages, nor any other incentive to do so.

tailored to achieve that end.<sup>24/</sup> Few regulations can shoulder that test, and the Gas Utilities doubt this is one of them.

21. For these reasons the Gas Utilities request the Commission reconsider its Decision and prohibit store and forward interconnection with the PSTN. In the absence of such a prohibition, congestion within the multilateration bands is likely to become so severe as to make these bands unusable for Part 15 operations. Part 15 operations will then migrate outside the multilateration bands, causing noise levels in other sub-bands to rise to a level at which Part 15 functioning will also be impaired. Real time interconnected service is appropriate for emergency communications in the multilateration bands and will not likely lead to the same levels of congestion. However, to the extent general messages relating to the location and monitoring of vehicles are needed to be transmitted, these can and should be amply accommodated via the dispatch centers of the multilateration providers themselves rather than through store and forward interconnected traffic.

**C. The testing requirement will not ameliorate the problems likely to result from wide-band forward links and liberal PSTN interconnection.**

22. Although the Decision recognized the band-crowding phenomenon discussed above,<sup>25/</sup> it appeared to dismiss it without further consideration in light of the requirement adopted that

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<sup>24/</sup> See Boos v. Barry, 485 U.S. 312 (1988); Perry Education Assn. v. Perry Local Educator's Assn., 460 U.S. 37, 45 (1982).

<sup>25/</sup> See Decision at para. 23.

multilateration licenses are to be conditioned on testing to ensure that Part 15 operations will not be unduly hindered. See Decision at para. 81-82. However, the Gas Utilities do not see the requirement for testing of multilateration systems to be an answer to the band-crowding problem. First, although the Gas Utilities have consistently supported and continued to support testing, either voluntarily or mandated by the Commission, the Decision sets forth no criteria or guidelines for testing, nor for determining "what are unacceptable levels of interference to Part 15 devices."<sup>26/</sup> Second, the Gas Utilities certainly agree with the Commission that the technical refinements of limited duty cycle, pulse duration, etc., may be employed to facilitate band sharing and to minimize interference, see Decision at para. 82; however the rules contain no requirement that systems actually employ such refinements. Third, although the Commission expresses its expectation that testing will be accomplished through close cooperation between multilateration system operators and Part 15 users, see Decision at para. 82, it adopted no rules or guidelines for ensuring that cooperation.

23. For the testing requirement to have any efficacy, a prospective multilateration system operator should be required in its application to set forth full details concerning its proposed testing plan, including data explaining how it intends to involve Part 15 users in conducting and evaluating the testing results. That testing plan at a minimum should be devised to determine

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<sup>26/</sup> See Rule Section 90.353(a)(4).

whether the applicant's base station operations, simulating a fully loaded system, will have a noticeable adverse effect on indoor or outdoor Part 15 devices operating within one-half mile if the base station is located in a recognized commercial area, or one-quarter mile if the base station is located within a residential area. Noticeable adverse effects should include: more than a three percent drop in usable reads from installed AMR devices; increased static or dropped calls from representative cordless phones operated outside at 75 percent of their maximum baseline range in the presence of other 900 MHz cordless phone usage; and improper functioning of other 900 MHz consumer devices used in accordance with manufacturers' specifications.

24. Testing plans should be subject to public comment and evaluated by the Office of Engineering and Technology prior to grant of construction authority. Parties wishing to participate in the tests should be entitled to do so as a matter of right and should be entitled to receive and review all data generated by and necessary to evaluate the tests.<sup>27/</sup> Any disputes regarding the

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<sup>27/</sup> Claims of proprietary technology should not be allowed to defeat review of documentation necessary to design and evaluate testing plans. In this connection, the Gas Utilities note they participated in 1994 in discussions among industry representatives leading toward comprehensive testing. That attempt to test was not successful, however, as a number of parties declined to participate. In declining to participate, certain of those parties cited their inability to reveal supposedly proprietary information. The Commission can deal with that problem, however, simply by requiring any parties involved in testing to execute an agreement to keep proprietary information confidential.

scope of the tests or the rights of parties to review documentation should be resolved via binding arbitration.

25. Once the Commission is satisfied with the testing plan, it should grant a conditional license to construct the multilateration system and to operate it for testing purposes only. Upon completion of the testing program, the multilateration licensee would make its testing data fully available to the public and the Commission, and submit its analysis of the data with its application for permanent license. If the data showed noticeable adverse effects would likely occur, the licensee would be required to propose ameliorative measures. After appropriate public comment on the testing results and any proposed ameliorative measures, the Commission would evaluate the licensee's submissions, and public comment, and if satisfied that unacceptable interference to Part 15 devices would not be present, it would grant full operating authority. If not, it could grant continued conditional authority and impose any additional ameliorative measures deemed appropriate.

**V. Conclusion.**

26. The Gas Utilities appreciate the Commission's recognition of the public interest benefits of Part 15 devices, including automatic meter reading devices, and its concern for the continued viability of Part 15 use of the 902-928 MHz band. In order to ensure that the 902-928 MHz band will remain a hospitable environment for Part 15 use, limited reconsideration of the decision is warranted to:



- a. Limit emissions from LMS base and mobile transmitters operating from 902-927.25 MHz to 10 watts ERP, except where highly directional antennae are employed, and impose reasonable height restrictions on multilateration systems transmitting antennae;
- b. Provide protection for Part 15 devices from interference from grandfathered multilateration stations; and
- c. Prohibit wide-band forward links and provide stricter limits on interconnection and operations with the PSTN.

With these proposed modifications, the Commission will help ensure that Part 15 devices, including AMR devices, will be able to continue to function within the 902-928 MHz band, without harming